Musway M6v4 6 Channel Amplifier with 8 Channel DSP Instruction Manual

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Musway M6v4 – 6-channel amplifier with 8-channel DSP

A Classic Reloaded

With the M6v4, Musway introduces the fourth incarnation of its successful M6 model. We take a look at

what this universal tool can do.

The M6 was the product with which Musway debuted in Europe—a compact amplifier with DSP, universally applicable and, above all, affordable. A lot has happened since the first version. Musway has tweaked the DSP and amplifier but kept the concept the same. Perhaps the most significant changes have recently occurred behind the scenes: vehicle compatibility, operational reliability, and compatibility have become more critical to the developers than naked amplifier power. The concept still works with the M6. We have a small amplifier that is easy to install and ideally wired with a cable harness and a small power supply for plug-and-play.

Two variants are available from your Musway dealer: the M6v4 for EUR 630, which includes an ISO wiring harness, and the M6v4 Evo for EUR 600, which comes with a mini wiring harness on loose wires. Furthermore, there are optional vehicle cable sets available for various manufacturers. The list of accessories does not end there because no fewer than three Bluetooth dongles are available: an affordable streaming dongle, one for HiRes streaming, and one that, in addition to streaming, allows wireless DSP programming. And finally, there are two RCA cable sets that would enable the speaker-level inputs to be converted to RCA for line-level signals. For this purpose, there is a corresponding jumper on the M6v4 circuit board to convert from high to low level. The standard high-level version has an EPS for vehicles with factory-installed speaker recognition, so the M6v4 is genuinely versatile.

In addition to the six line-level inputs, the M6v4 offers a pair of RCA jacks as auxiliary inputs and an optical digital input, which leaves nothing to be desired. Musway sticks to the proven concept when it comes to DSP. The assembly consists of the ADAU1452 as a DSP chip and the combined converter PCM3168A, a proven

combination established in many signal processors on the market.

The PC software shows all essential functionality in the main window

Located on the left of the daughterboard DSP.
The jumper for switching between high and low is located at the bottom

The remote control regulates the master and sub volume, subwoofer groups, and the mute function

The sampling rate is 48 kHz, allowing for an audio bandwidth of up to 22 kHz – also a good standard. There are eight DSP channels, so in addition to the six built-in amplifier paths, we find two processed outputs, for example, for subwoofer applications. Three two-channel chips do the amplification; the six amplifier channels are identical, and everything is 2 ohms stable and bridgeable.

Digital sources can be connected via the optical input or Bluetooth dongle

Specifications

Inputs

- 6-channel high-level with autosense
- 1-channel AUX/RCA
- 1 x digital S/PDIF optical
- Sensitivity 5 V (RCA), 21 V (high level)
- 2 x gain control (high level)
- 1 x gain control (AUX)

Outputs

- 2-channel RCA (processed)
- Remote-out

DSP-channels

- 8

DSP software (V3.4 beta in test)

Equalizer

Outputs

- parametric, 31 band per channel
- 20 – 20k Hz, 1-Hz steps
- +15 – -15 dB, Q 0,1 – 10

Crossovers

- 20 – 20k Hz, Butterworth, Bessel, Linkwitz, 1-Hz steps
- Filter slope 6 – 48 dB/Okt.

Time and level

- Sample rate 48 kHz, 7 mm steps (0.02 ms)

Outputs

- 0 – 602 cm (17.7 ms), 1024 samples
- Phase 0, 180°
- Level steps 0.1 dB, mute

Features

- 6 presets
- Remote Out
- 2 x gain control
- EPS (Error Protection System) for diagnostic function
- Signal dependent switching to Bluetooth or S/PDIF
- Signal dependent switching to high-level for vehicle tones
- Sub setup (subwoofer channels on remote control)
- Power save mode
- Export/import setting via Whatsapp

Optional accessories

- Bluetooth dongle BTS
  (audiostreaming)
- Bluetooth dongle BTS-HD
  (hi-res streaming)
- Bluetooth dongle BTA2
  (audiostreaming + app control)
- Remote controller RC1
  (volume, bass level, sources, setups)
- RCA adapter MPK-RCA6,
  MPK-RCA6-PP für ISO
- T-harness for various vehicles
  (Mercedes, BMW, Audi, a.o.)

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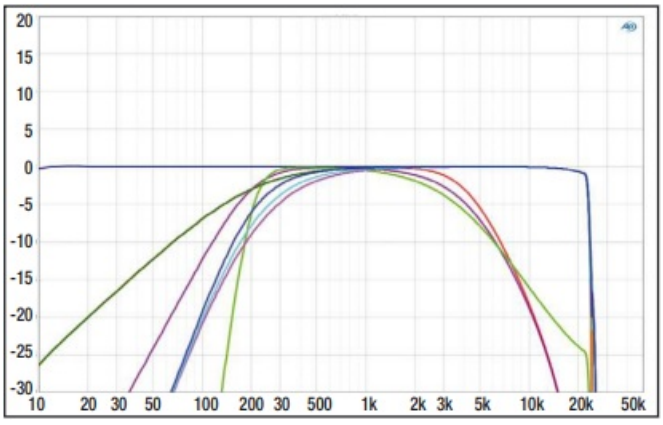
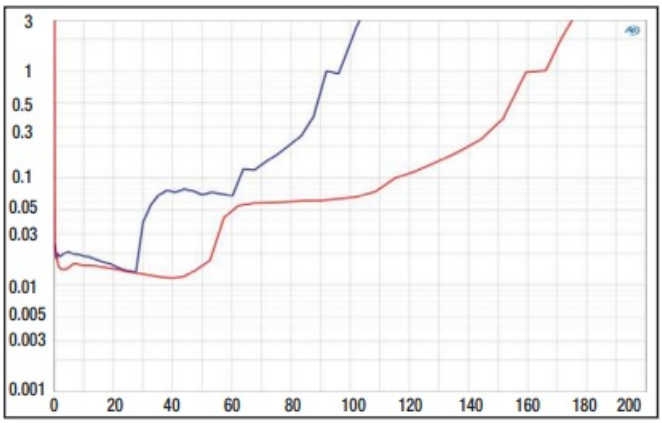


The cut-off frequency is 22 kHz due to the sample rate, and the crossovers are programmed sloppily: high pass at 200 Hz (But, Bes, Lin) and low pass at 3 kHz



The M6v4 delivers almost 100 watts at just 4 ohms, and the distortion of 0.015 % is impressively low, especially in the first third of the power range

Master and sub levels in the Android app

EQ settings in the Android app

Musway promises an increase in power and a general improvement in performance. Among other things, the new Infineon controller is responsible for this, as it controls the “life-supporting” functions of the amplifier. This allows the M6v4 to monitor and adjust temperature, current consumption, undervoltage and overvoltage, power supply function, and impedance.

Software

All Musway DSPs can be programmed using PC desktop software or an Android app, the latter in conjunction with the optional BTA2 accessory. Except for routing and minor details, all relevant settings can be found in one window. When routing, it is essential to note that it is not enough to meter the inputs in the routing matrix; the correct checkmark(s) must also be set in the main window. There are bandpass crossovers for all channels up to 48 dB/octave in three characteristics. Programming the crossovers is a bit of a hassle, e.g., with odd orders for Linkwitz or varying attenuation at the set crossover frequency. However, the crossovers work in principle. The EQ bands can be set fully parametrically, and there is also time alignment of the outputs in 0.02 ms or 7 mm steps. Conveniently, the time or path is displayed precisely and in plain text, without any frills such as coarse and fine adjustment. The frequency window clearly shows what is happening, and the EQs are also easy to operate (also via the keyboard). The grouping of channels is well solved; a bridge circuit can also be displayed, and up to four channels can be combined into a subwoofer group, which is then recognized by the optional remote control. The extras are few, but they are important. We have a power-saving cutoff for Can vehicles, a setting for switching through vehicle sounds, and an auto-mute function to prevent crackling. Furthermore, the M12 offers an input pin for the reverse gear, which feeds in the vehicle sounds. This means that the Musway software is not the most complete on the market, but in most cases, it enables problem-free operation. A big plus point is the Musway “Tunest” app, which, in conjunction with the BTS2, allows complete DSP programming and enables remote control functions such as master and sublevel, source selection, and source selection.

Measurements and sound

On the test bench, we can immediately confirm the power regimen that gives the v4 a good deal of extra power compared to the v3, namely 96 watts at 4 ohms and 166 watts at 2 ohms, clearly setting the M6v4 apart. But it not only scores in terms of maximum power but also distortion. Especially at lower power levels, essential for sound quality, the distortion is now an entire order of magnitude lower – an outstanding achievement. Sound-wise, the clarity of the reproduction is pleasing; the music sounds well-balanced and tidy. Overall, the M6v4 is very mature and without gimmicks and is recommended for all styles, from jazz or chamber music to rock. You will not find any serious weaknesses; in practice, the DSP is responsible for the much more relevant conditions in the vehicle anyway.

Conclusion

With the M6v4, Musway offers a universal tool for expert sound in vehicles. The price is still fair, even with the numerous accessory options. And the performance and power leave nothing to be desired.

Elmar Michels

Eine von drei Bluetooth-Quellen: Das BT-HD kann Audiostreaming in HiRes-Qualität

Specifications

Channels	6
Channel power 4 ohms W	6 x 96
Channel power 2 ohms W	6 x 166
Channel power 1 ohms W	–
Bridged power W	3 x 332
System power W	690
Sensitivity max. mV	750
Sensitivity min. V	2.2
THD+N (<22 kHz) 5 W	0,019
THD+N (<22 kHz) half power	0,075
Signal-to-noise ratio dB(A)	891
Damping factor 20 Hz	72
Damping factor 80 Hz	72
Damping factor 400 Hz	72
Damping factor 1 kHz	67
Damping factor 8 kHz	12
Damping factor 16 kHz	3

Features

Low pass	20 – 20k Hz
High pass	20 – 20k Hz
Band pass	20 – 20k Hz
Bass boost	-15 – 12 dB/20 – 20k Hz
Subsonic filter	via HP
Phase shift	0, 180°/LZK via DSP
High-level inputs	•
Auto turn-on	•, DC
Cinchausgänge	•, 2CH, processed
Start/stop capable	– (7,6 V)
Dimensions (L x W x H in mm)	200 x 150 x 45
Others	8-channel DSP

Musway M6v4

Price	600 Euro
Contact	Audio Design, Germany
Internet	www.musway.de/english/

Rating

Sound	40 % ★★★★★
Bass	8 % ★★★★★
Neutrality	8 % ★★★★★
Transparency	8 % ★★★★☆
Spatial imaging	8 % ★★★★★
Dynamics	8 % ★★★★★
Lab	35 % ★★★★☆
Power	20 % ★★★★★
Damping factor	5 % ★★☆☆☆
Signal-to-noise ratio	5 % ★★★★☆
Noise	5 % ★★★★☆
Practice	25 % ★★★★★
Features	15 % ★★★★★
Build quality electronics	5 % ★★★★☆
Build quality mechanics	5 % ★★★★★

Top Class

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Price/performance: very good

“A universally deployable six-channel solution at a fair price.”

Documents / Resources

	**Musway M6v4 6 Channel Amplifier with 8 Channel DSP** [pdf] Instruction Manual M6v4 Evo, M6v4 6 Channel Amplifier with 8 Channel DSP, M6v4, 6 Channel Amplifier with 8 Channel DSP, Amplifier with 8 Channel DSP, 8 Channel DSP, DSP, Amplifier

References

- User Manual